In Re Application Of:	David O. McGoveran	Examiner:	Andre D. Boyce
Serial No.	09/476,711	Group Art Unit:	3623
Filed:	Dec. 30, 1999	Atty. Docket No:	McG-003
For:	A Declarative Method	Date:	Sept. 29, 2008

REMARKS

This replies to the Final Office Action mailed on May 29, 2008. Claims 112-190 and 192 are dropped and new claims 193-273 are submitted, incorporating various changes to correct informalities in the Claims, more obviously overcome Examiner's rejections, and to thus place the Claims in condition for allowance.

Claim Rejections under 35 USC §112

The Office Action rejects Claims 112-190 and 192 under 35 U.S.C. § 112, first paragraph, as failing to comply with the enablement requirement. Examiner asserts that "The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention." Additionally, Examiner states: "Here, the result of the invention lacks concreteness, since the result is not assured and reproducible, as discussed below. As such, the invention cannot be used as intended without undue experimentation, and is therefore not enabled." This rejection is traversed for the following reasons, summarized here and addressed in detail below:

- *Applicant's Specification Is Enabling for Managing, Implementing, and Executing A Business Process*
- *Examiner Fails to Present Reasons Applicant's Specification Does Not Enable Claims*
- *Applicant Provided Examiner References to Specification for Each Element of Independent Claims 112; and Now for 193 and 272;*
- *Applicant's Specification Describes Necessary Aspects of Each of Multiple Arts As Required By PTO Examination Guidelines*
- *Third Parties, including PTO's Referenced Expert, Provided An Affidavit of Understanding Applicant's Specification and Invention*

- *Examiner Relies Solely On His Own Presumed Expertise*

Applicant's Specification Is Enabling for Managing a Business

The title, abstract, Figure 3, and numerous paragraphs (e.g., p. 4, 1st full para; p.10, 3rd full para.) within the written description cite the invention as a method for business management implemented on a computer (e.g., pp.11, 12, 13, and 17). Applicant's invention is not a method for achieving an arbitrary objective as characterized by Examiner, but for managing a process having an objective that can be measurable goals and constraints. It describes a business as a dynamic and emerging process, how to create a model using various Elements so as to represent the business and its activities, how to make that model act on the business and be responsive to the events and changes in the business, and how to automate management of that business via the model through rules that modify the model and provide a feedback mechanism.

Examiner Fails to Present Reasons Applicant's Written Description Does Not Enable Claims

PTO's Synopsis of Application of Written Description Guidelines, page 4, states:

> "...the examiner has the initial burden, after a thorough reading and evaluation of the content of the application, of presenting evidence or reasons why a person skilled in the art would not recognize that the written description of the invention provides support for the claims."

As has been consistent with Examiner's prior office actions in this prosecution, Examiner provides neither evidence nor reasons, merely makes an unsupported and non-specific assertion that Applicant's claims "...contains subject matter which was not described..." Examiner fails to cite any specific non-described subject matter. Examiner's rejection does not comply with PTO examination guidelines. It is unreasonable for Applicant to guess to which, out of 79 claims, Examiner refers. If Examiner asserts that the statement refers to claim 112, it is unreasonable for Applicant to guess to which step, out of steps (a) through (k) in claim 112, Examiner refers.

This omission fails to address the contradictory effect of Applicant's last Response to Office Action, which specifically provided evidence of enablement for each and every

element of each and every step in claim 112, and therefore further rejection demands specific reasons be provided from Examiner as to why such support for a specific part of some specific claim would not be recognized by one skilled in the arts. Likewise, the evidence for claim 193, the newly revised version of former claim 112, is provided below.

By further example, Examiner has never stated which specific art he asserts the specification "pertains, or with which it is most nearly connected, to make and/or use the invention." Inasmuch as Applicant's invention combines and relies on prior art from multiple arts – each clearly referred to in the written description – it is unjust and absurd to expect Applicant to know, or to have to guess, to what Examiner refers.

In light of Applicant's specification, use of the method to manage a business would be obvious to one of skill in the arts of business management and rules-based systems.

Applicant Provided Examiner References to Specification for Each Element of Independent Claims 112, and Now for Claims 193 and 273

Applicant's general objection notwithstanding, in Applicant's response dated Nov. 20, 2006 responsive to OA mailed August 18, 2006 provided Examiner with point by point references to each element of claim 112 and, as claim 192 is the means plus function claim corresponding to claim 112, thereby for claim 192 as well. The evidence for claim 193, the newly revised version of former claim 112, and 272 are provided below. *What more does Examiner require?*

Independent Claims 193 and 272 are set forth below with references to some of the text and figures that describe the limitations of and enable the claim. The notation [__: __] having numbers in place of these underscores, refers to Page:Line Number(s). The notation **< Summary Descriptive>** denotes conceptual 'shorthand' mnemonic phrases not included in the Application but useful in drafting, or following, the USPTO required full text.

Pagination and line numbers are consistent with the attached "pdf" file and line numbers per Adobe Acrobat – however, that program does not count blank lines. Also note that, in this file, "Background of the Invention" is counted as being on page 3.

193. A computer-implemented business method **[Fig. 2; 14:10-16 and 14:2-6]** for managing a business **[Title; Abstract; 4:3-6; 10:26-11:2]** comprising:

<identify what is to be modeled>

(a) identifying a first dynamic process used by a first business **[Abstract; Fig. 2, numeral 16; 12:4-6, 24-29; 13:17-20; 17:1-3]**, said first dynamic process comprising:

a plurality of links among the components **[11:2-5; Fig. 1; 15:14-17; 18:8-14; 20:5-6; 22:4-7]**;

a plurality of business decisions **[Fig. 2; 7:19-21; 11:23-25; 12:1-3]**;

a plurality of activities **[3:14-17]** and operations **[4:9-10; 10:8-12; 14:29-15:2; 21:1-6, 22-25]** comprising at least a first business operation implemented based upon a business decision **[Fig. 1 numeral 3; 11:21-27; 21:1-6]**;

at least a first objective **[Fig. 2 numeral 15; 4:3-6; 7:1-3; 12:4-6]**;

at least a first subordinate objective subordinate to the first objective **[11:2-5]**;

at least a first Actor, any Actor being at least one of human agent, semi-automated agent, and automated agent **[3:19-20; 16:28-29; 19: 29-20:1; 20:4-5]**;

a plurality of Measurable values, comprising at least a first Measurable value **[13:27-29; 16:7-10, 17-27]**;

at least a first condition **[10:12-15, 20-26]**; and,

at least a first event **[7:21-24; 10:8-12; 11:21-27; 15:20-22]**;

<create the model describing what is in the model and how parts are related – Fig. 3; and 15-22 >

(b) creating a model (i.e., a representation) of the first dynamic process **[Fig. 1; Fig. 2; Fig. 3; 10:8-15; 13:21-27]**, said model implemented on a computer and comprising:

(1) a plurality of Elements, any Element being at least one member of an element set comprising Goal, Rule, Rule Set, Condition, Action, Constraint, Measurable value, and Delegation **[16:31-32]**;

(2) a plurality of Rules, each Rule comprising at least a first Condition that is satisfied when it evaluates to a specified and predetermined value and at least a first Action that is triggered when the first Condition is satisfied **[15: 14-17; 15:20-16:6]**;

(3) **[18:8-24]** at least a first objective Rule Set **[15:18-19 (defined)]** representing a portion of the first dynamic process having the first objective and having a plurality of Rules **[15:14-17 (defined)]**;

(4) storing the first objective Rule Set in a database **[Fig 4]**;

<first model the objective>

(5) declaring and stating:

> **[17:4-5]** at least a part of the first objective of said first dynamic process **[Fig. 2 numeral 15; 14:6-9]** as a set of measurable Goals **[12: 4-6; 15:7-13 (defined)]** and Constraints **[16:7-16 (defined)]** comprising at least a first Goal; and,

<create rules to achieve a result>

> **[18:8-24]** at least the first objective Rule Set **[15:18-19 (defined)]**, said Rules in the said objective Rule Set being defined to accomplish at least the first Goal by the combination of at least one subset thereof **[Fig. 2, numeral 16 and 12:4-20]**, and said Rules in said objective Rule Set act in any order **[18:11-14]** subject to the limitation that, for any specific Rule in said objective Rule Set, that specific Rule's Condition must be satisfied and applicable Constraints met before that specific Rule's Action may be triggered **[16:7-16; 23:1-7]**;

<temporal order of rules is implicit>

(6) **[18:8-14; 21:1-21]** determining the triggered Action of at least a first Rule and its relative order with respect to a second Rule's Action, and therefore to the model of rules of behavior of the dynamic process, at least partially by logical

inference **[6:8-13, Fig. 1; Fig. 3]** from Rules, Conditions, Constraints **[15:14-28; 16:7-16; 17:4-5]**, and temporal order of satisfaction and activation **[18:11-14]**, rather than said relative order being predetermined and required by human mandate;

<refinement of objectives>

(7) refining the model of the first dynamic process to provide increasing detail and finer granularity **[Fig. 1; Fig. 2 numeral 19; 6:8-21; 10:26-11:5; 12:29-13:5; 18:19-24]** comprising:

specifying a set of Rules for accomplishing the first subordinate objective**[6:3-13; 17:26-18:3; 20:2-3; 23:22-26]**; and,

stating the first subordinate objective as a set of subordinate, measurable Goals and subordinate Constraints **[11:2-5; 12:4-10; 17:4-5; 18:18-23]**;

<delegation>

(8) **[20:19-21]** delegating via Delegation **[7:1-16; 11:2-5; Fig. 4; 12:28-13:5; 16:28-29 ("Delegation" defined)]** to at least one specific set of Actors **[3:19-20; 16:28-29 (defined); 19: 29-20:1; 20:4-5]** comprising at least one Actor **[Fig. 2, numeral 17]**:

at least the first subordinate objective **[11:2-5; 18:1-17; 20:8-18]**;

a set of Rules for accomplishing said first subordinate objective**[7:1-16; 18:1-17]**;

authority via at least one Rule stating authority for attaining the subordinate, measurable Goals of said first subordinate objective **[11:2-5; 12:28-13:5; 16:28-29; 20:8-10]**;

accountability via at least one Rule stating accountability for attaining the subordinate, measurable Goals of said first subordinate objective **[11:2-5; 12:28-13:5; 16:28-29; 20:10-13]**; and,

responsibility via at least one Rule stating responsibility for attaining the subordinate, measurable Goals of said first subordinate objective subject to the Constraints and subordinate Constraints **[11:2-5; 12:28-13:5; 16:28-29; 20:8-10]**;

<input: rules triggered based on real-world event>

(9) **[18:8-18; 21:1-6]** determining as input to the model that at least one Rule's Condition is satisfied and triggering said Rule's Action further comprising;

incorporating as input to said Rule's Condition at least the first Measurable value representing a factual circumstance **[12:15-19; 14:5-9; 15:14-17; 15:20-16:14]** from at least one of the first_dynamic process' internals **[4:7-9]**, a source external to said first dynamic process including external interaction **[4:7-9]**, and a source in the real world outside the first business **[10:20-26]**;

<input and output: self-modifying model based on real-world event>

(10) **[14:5-9; 15:29-16:6; 18:8-18; 22:4-21 (preferred embodiment)]** modifying the model through the Action of some Rule whose Condition is triggered by at least one input from an event in the real world **[15:20-16:14 (defined)]** and said Action results in one of creating, deleting, modifying, and correcting at least one of Element **[16:30-31 (defined)]** and Actor **[16:28-29]**;

<how model is represented>

(11) specifying at least partially through a declarative and therefore non-procedural representation **[18:7-8]**a plurality of Elements and each of the steps of declaring and stating **[17:10-12; 18:10-11; 21:27-3; 22:4-7]**, refining **[11:21-12:3]**, delegating **[7:1-16; 11:2-5; Fig. 4; 12:28-13:5; 16:28-29 ("Delegation" defined)]**, determining **[18:8-18; 21:1-6]**, and modifying **[22:4-7; 24:5-9 (best embodiment)]**;

<generate output that changes the world via or per model – managing and automating via the model>

(c) generating in accordance with the satisfaction of at least one Rule of the model, at least a first output contributing to any of initiating **[21:6]**, controlling **[5:10-12]**, managing **[Abstract; 4:3-10]**, and modifying **[10:20-11:5]** any portion of the dynamic process, the first output being at least one member of an output set comprising:

output modifying of any portion of any dynamic process comprising operation **[4:9-10; 6:3-19; 14:25-15:2; 18:14-18]**, decision **[Fig. 1; 11:21-12:3; Fig.2, numeral 19; 21:1-6]**, activity **[21:1-6]**, process, (factual circumstance, event,

Measurable value **[15:29-16:6]**), (goals, objectives, constraints, condition, actions **[22:4-10]**), Actor, and links **[11:2-5; Fig. 1; 15:14-17; 18:8-14; 20:5-6; 22:4-7]** among components;

output modifying any of operation, decision, activity, process, factual circumstance, event, Measurable value, goals, objectives, condition, Actor, and links **[11:2-5; Fig. 1; 15:14-17; 18:8-14; 20:5-6; 22:4-7]** external to the first dynamic process **[same as previous substep]**;

output implementing at least one business decision **[21:1-10]** which initiates an operational process that in turn produces a measurable result detectable via some Measurable value;

output modifying at least one Element of the model **[15:29-16:6]**;

output modifying at least one link **[11:2-5; Fig. 1; 15:14-17; 18:8-14; 20:5-6; 22:4-7]** among Elements of the model;

<output: model does operations automatically>

output initiating, via at least one Actor responsive to at least one Action, at least a first automatic operation belonging to the first dynamic process **[15:2-5; 21:1-7]**; and,

< output: Actor make changes>

output of at least one action implemented by at least one actor and deriving at least a second Measurable value from said at least one Action implemented by at least one Actor **[15:20-16:6]**;

< model evolves per business and physical events drive model>

(d) adapting the model according to any of changing business, dynamic process, and factual circumstances**[10:8-11:2; 11:22-12:3; 18:25-27]** comprising:

incorporating changes to at least one Element of the model in accordance with changes in or additional detail of the first dynamic process **[10:26-11:12; 15:30-16:6]**.

<capture changes to world back in model, closing loop>

(e) representing some factual circumstance created via any of triggered Rule's Action **[15:30-16:6]**, operational process **[21:1-6]**, and Actor **[16:28-29]** in the model and satisfying at least one Condition of at least one Rule in response to said factual circumstance **[18:19-24]**;

<total gen new process definition; capture or infer pattern in model>
(f) inferring a first process representation of a first emerging behavioral pattern **[21:22-27]** of the first dynamic process comprising:

detecting that a plurality of Rules that have been triggered**[18:8-14]**;
inferring through logical inference **[Fig. 1; Fig. 2; Fig. 3; 6:3-13; 11:21-12:27]** that the plurality of Rules are partially ordered **[18:8-14]** in time;
incorporating in the model a representation of a dynamic pattern of operations **[18:8-18]** driven by real-world conditions **[Fig. 3 – Business Process Modeling, Managers Interface]**;
storing the first process representation as part of the model **[Fig. 3 – Process Database]**; and,
making the first behavioral pattern of the first dynamic process emerge **[21:23-31]** via the first process representation;

and,

<was preamble>
(g) through the steps of creating, generating, adapting, representing, and inferring, actively **[4:9-10]** and declaratively **[Title; Abstract; 13:13-17]** managing any portion of the first dynamic process **[Fig. 2, numeral 16; 17:22]** via the model and therefore the model's output.

272. A computer-implemented business method for actively **[4:9-10]** and declaratively **[Title; Abstract; 13:13-17]** managing, implementing, and executing a first dynamic process **[Fig. 2, numeral 16; 17:22]** incorporating a dynamic pattern of operations **[18:8-**

18] driven by real-world conditions **[Fig. 3 – Business Process Modeling, Managers Interface]**, through which at least a first behavioral pattern emerges **[21:23-31]**, comprising:

capturing a first decision as a Rule set comprising at least a first Rule, a second Rule, and a third Rule, each Rule comprising an Action and a Condition **[Fig. 1]**;

satisfying the first Rule's Condition via a first Measured value **[15:20-28]**;

determining that the first Rule's Action has triggered the second Rule's Condition **[15:14-17]**;

storing the Rule Set in a rules database **[Fig. 3]**;

inferring that all Rules in the Rule set that have been triggered form a partially ordered set wherein Actions of preceding Rules trigger Conditions of subsequent Rules wherein said dynamic process comprises the set of possible Conditions and Actions of said partially ordered set of Rules **[See refs. of claim 193, step (f)]**;

storing a declarative representation of the partially ordered set of Rules in a process database **[See refs. of claim 193, step (f)]**;

displaying both a representation of the first dynamic process as a business process model and a first business metric derived from at least a second Measured value **[Fig. 1; Fig. 3; 11:21-12:31]**; and,

implementing the third Rule's Action via an operations interface **[Fig. 3]**.

Applicant's Specification Describes Necessary Aspects of Each of Multiple Arts As Required By PTO Examination Guidelines

PTO's Examination Guidelines for Computer-Related Inventions, Final Version ("Examination Guidelines", hereinafter), page 26, states:

> "... it is not unusual for the claimed invention to involve more than one field of technology. For such inventions, the enablement requirement must satisfy the enablement standard for each aspect of the invention. ... the disclosure corresponding to each aspect of the invention must be enabling to a person skilled in each respective art."

Applicant's invention combines elements of technologies that implement business management approaches such as workflow management in a specific computer implementation using declarative rules that provides the benefits of management-by-objective, balanced scorecard, and statistical management approaches, while incorporating novel features not found in any of them. Each of the necessary prior art technologies was described sufficiently for Examiner to find and cite references to them in the prior art (Davis, *et. al* , The Information System Consultant's Handbook, Dec. 1998; McDermid, Software Engineer's Reference Book, 1991; Bidgoli, Handbook of Information Systems: A Managerial Perspective, November 1998; Kaplan *et. al.*, Linking the Balanced Scorecard to Strategy, Fall 1996). This background material was well known to those skilled in the arts and readily available, requires no undue experimentation, and is among the prior art relied upon by Applicant.

Numerous prior patent art references, readily available to Examiner, provide descriptions of ways to use rules to implement workflow management (e.g., see US 5,799,297 and 5,848,393 which describe using rules to model the predetermined task execution sequence in a workflow).

The following U. S. Patents demonstrate that the use of rules, workflow, triggering of activities, and business processes are well-known in the prior art literature and that there was never any need for Applicant to enable these within Applicant's specification:

- U. S. Patent 6,873,962 titled "Train corridor scheduling process " and filed 10/30/1999 teaches applying rules and artificial intelligence to process.
- U. S. Patent 6,832,201 titled "Method and system for optimizing request shipping in workflow management systems" and filed 11/19/1999 teaches workflow, business process, and triggering activities.
- U. S. Patent 6,631,354 titled "Deriving and running workload manager enclaves from workflows" and filed 12/1/1999 teaches workflow, business process, and using rules for classification.
- U. S. Patent 7,092,894 titled "Cost reactive scheduler and method" and filed 12/31/1999 teaches the use of expert system and a rule base for scheduling of business activities. It's parent applications are clearly in the prior art, going back to 1994.

Applicant's specification describes the necessary rules and other elements in great detail, and even Examiner understands that computer implementation of rule-based systems and business management are well-understood in the prior art, as evidenced by Examiner's citation of expert systems, other rule-based systems, and business management in his prior office actions. Applicant cites prior relevant business management art that addresses process management and improvement through other means (such as management by objective, total quality management, balanced scorecard, statistical management, and work-flow management). Applicant teaches how the prior art is limited and how to redress and overcome those limitations. Applicant then teaches how to combine these previously separate, even divergent arts, using rules to model and simulate the business and its various components (e.g., its operations, processes, goals, measurements, activities, delegation, authorizations, and so on). One skilled in each of the technological arts of rule-based systems, especially those that are "invoked by outside events", and workflow management, will readily understand from Applicant's specification how to practice the invention.

The fact that a person who is also knowledgeable in the business management arts would readily understand the motivations, benefits, utility, and concrete applicability of

Applicant's invention having read Applicant's specification, is evidenced by Professor Bidgoli's affidavits, previously provided to Examiner. Both Bidgoli and Evans testified to the novelty of applicant's invention, such novelty not appearing in combination with any prior art.

The above citations and Examiner's Office Actions make it clear that any elements required to practice the invention which are not taught in Applicant's specification are well-known in the prior art. Previously, when Applicant attempted to amend the specification by providing additional prior art discussion, Examiner refused to permit that material even though it was not new matter, since it was only discussion of prior art.

Third Parties, including PTO's Referenced Expert, Provided An Affidavit of Understanding Applicant's Specification and Invention

Applicant again requests that specific notice be taken of the affidavit of Professor Hossein Bidgoli – an independent, third-party expert who was first referenced by the PTO – who has declared of Applicant's invention after reading the specification (*Bidgoli Declaration*, October 15, 2003, on file):

> "With respect to business management methods I am cognizant of and those fields of expertise which I am knowledgeable about (see my attached curriculum vitae), putting these combination into effect would be within the ordinary skill of those experienced in each of the appropriate fields after reading the disclosure in the inventor's application. Prior to 12/30/1999 and without that disclosure, I believe that it was not within such ordinary skill.
> Each of the necessary concepts, tools, and means of their combination were disclosed to that level of detail necessary for their comprehension and subsequent implementation; those details which are well-known to those with ordinary skill were not described."

How could PTO's expert state more clearly or more definitely that Applicant's specification enables the invention? Indeed, Bidgoli uses his own understanding to make additional declarations:

> "Those with ordinary skill as described above, upon reading the inventor's application, would appreciate the invention's usefulness. Its advantages were clearly stated."
> "Its uniqueness and advantages are clearly introduced by the inventor in his proposal."
> "Throughout my 24+ years of teaching and publishing more than 120+ books, articles and professional manuals I have not seen a method or model similar to the one presented by the inventor for business management and to me it is novel and unique."

PTO's third-party expert Prof. James Evans likewise understood the invention well enough to assert (in direct contradiction of Examiner's assertion that TQM disclosed the invention):

> "The invention ... does not match any description of TQM as practiced and as described in the literature."

Neither Professors Bidgoli nor Evans could have made such affidavits if they did not understand Applicant's invention based on Applicant's specification. Therefore, Applicant's invention is enabled by Applicant's specification.

Examiner Relies Solely On His Own Presumed Expertise

Inasmuch as the OA cites no external evidence, authority, or source material to support the conclusions reached in the OA, Applicant must conclude that Examiner relied solely on his own knowledge in judging whether or not Applicant's invention is enabling to one skilled in those arts.

Applicant protests that this is not sufficient to produce a *prima facie* case inasmuch as it directly ignores and contradicts the previously-produced, written affidavit of widely published experts (Professors Bidgoli and Evans), one of whom (Bidgoli) Examiner himself cited in prior office actions. Applicant respectfully requests, if this application is not allowed, that Examiner be directed to follow the MPEP Requirements and provide for each objection not just a summary conclusion, but the evidence, basis, and methodological reasoning supporting each such conclusion, to enable Applicant to respond without having to guess at the Examiner's grounds or reasoning.

To the extent that Examiner holds himself to be an individual who is provably and reasonably skilled in each applicable art, Applicant respectfully requests that Examiner provide objective evidence as to his background, training, and experience. Applicant's prior requests that Examiner provide such evidence that he is provably skilled in each of the cited arts of rule-based systems and business management was and continues to be ignored by Examiner.

Applicant requests that an appropriate Examiner provably capable of making such judgment be assigned to this prosecution. Indeed, Examiner has repeatedly made assertions that either ignore clarifying limitations within the claims and specification, or else strongly suggest Examiner's skill is inappropriate to assess Applicant's invention.

For all, and for any combination of subsets of the above reasons, Applicant respectfully asserts that the objections under Section 112 have been successfully traversed, and that the revised claims are in proper form for issuance of a patent.

Claim Rejections under 35 USC §101

The Office Action rejects Claims 112-190 and 192 under 35 U.S.C. § 101, as being directed to non-statutory subject matter, asserting that "for a claimed invention to be statutory, the claimed invention must produce a useful, concrete, and tangible result. Applicant addresses Examiner's contention that a claimed invention must produce a useful, concrete, and tangible result and that Applicant's claims do not, without admitting any agreement with Examiner's selective and strained application of patent law.

This rejection is traversed for the following reasons, summarized here and further detailed below:

- *Examiner Asserts Without Any Basis That Applicant's Invention is Subjective*
- *Examiner Wrongly Asserts Applicants Invention Has Neither An Assured Nor Repeatable Result*
- *Examiner Erroneously Identifies The Invention As A Method to Achieve An Objective, Rather Than a Method to Manage a Process Having Objectives*
- *Examiner Presents a Strained Interpretation of Statutory Requirements*
- *Examiner Misquotes Applicant and Mischaracterizes Applicant's Invention*
- *Examiner Misconstrues Limiting Terms of Art*
- *An Assertion of an Invention Being Based on a Reasoning Paradigm, Theoretical Approach, or Roadmap is Insufficient Cause to Reject an Application*
- *Examiner Erroneously Concludes Applicant's Invention Would Require Undue Experimentation*
- *Examiner Misapplies The Limiting Term "Management"*
- *Examiner Fails to Follow the Claims and Specification*

- *A Method for Managing a Business Process Is a Patentable Invention*
- *Examiner Erroneously Asserts That Applicant's Invention is Overly Broad*
- *Examiner Asserts Without Basis Applicant's Invention is Not Tangible*
- *There is No Basis to Assert Applicant's Invention is Not Useful*
- *Examiner's Rejection is Prejudicial*
- *Pencil and Paper Do Not Suffice to Practice Applicant's Invention*
- *Examiner Asserts Without Basis That Applicant's Invention Is Not Concrete*

Examiner Asserts Without Any Basis That Applicant's Invention is Subjective

According to PTO's Examination Guidelines for Computer-Related Inventions, Final Version, an "[o]ffice action should clearly communicate the findings, conclusions, and reasons which support them." See page 28, Section VII, Clearly Communicate Findings, Conclusions, and Their Bases.

However, and continuing with respect to concreteness, Examiner asserts without any basis whatsoever that "this reasoning paradigm (i.e., claimed invention) is subjective, whereby the result is neither assured nor repeatable." As discussed above, Examiner improperly, prejudicially, and without any basis has characterized Applicant's invention as a "mere reasoning paradigm."

Examiner goes on to assert, again without any basis, argument, explanation, or specific citation, that Applicant's invention is "subjective." Applicant's specification does not use the word. *What does Examiner mean by 'subjective'?*

The dictionary (Webster's New World Dictionary, © 1974 Collins & World Publishing, p. 1418) defines subjective as "of, affected by, or produced by the mind or a particular state of mind; of or resulting from the feelings or temperament of the subject or person thinking; not objective; personal", or "of or having to do with the perception or conception of a thing by the mind as opposed to its reality independent of the mind".

To apply such an adjective to Applicant's invention is absurd. The claimed invention take place entirely in a computing machine, which requirement the specification and claims state many times (Specification, p. 11, 2nd para, 1st line, "If instantiated upon a computer..." and at the end of the same para, "particularly if implemented upon a computer system"; p. 13, last para., 2nd line, "embodied in a computer program"; Figure 3; Claim 112, 1st ¶, 1st line, "A computer-implemented method..."). Indeed, Applicant's specification makes it clear that a computer is ***necessary*** to address real world complexity (p.11, 1st full paragraph) and, therefore, to have utility! Applicant has never indicated otherwise and the rejected claims 112-190 and 192 make no attempt whatsoever to protect anything other than a specific computer implementation of the invention.

Steps of claim 112 (new claim193) interact with the physical world. In particular, step (h) clearly states that at least one Condition is triggered by input from an event in the real world, "through the Action of at least a Rule whose Condition is triggered by at least one input from an event in the real world". In step (f) objectives are delegated to Actors, each of which is, according to step (i), defined as a physical object (human agent, semi-automated agent, or automated agent). Thus, the method is a process that manipulates (i.e., transforms, often but not always by instructing it) a physical object. This discloses an invention that does not take place entirely in the mind, but interacts with the real world – the antithesis of a 'subjective' abstraction or non-applied theoretical effort. Each of these steps of claim 112 carry over into new claim 193 step (b). Furthermore, steps (c) and (d) of new claim 193 further make clear that the model generates output that changes both the external world and itself, and incorporates real-world input to evolve the model.

Examiner Wrongly Asserts Applicants Invention Has Neither An Assured Nor Repeatable Result

Examiner concludes that, since Applicant's invention is subjective, the result is neither assured nor repeatable. Yet Applicant provides examples in the specification (p. 16) of each element of invention, the result of which in combination is clearly assured and repeatable: management is automated and so managerial efficiency is improved (p. 5-7,

17). Indeed, the title of Applicant's invention is "A Declarative Method for Business Management" and Applicant uses the term "management" in the preamble of each and every independent claim.

That managerial efficiency is improved through automation is obvious, as is the fact that this is a result well within the scope of improving upon the technological arts. As Examination Guidelines points out (p. 29, footnote 7) the definition of "technology" is the "application of science and engineering to the development of machines and procedures in order to enhance or improve human conditions, or at least to improve human efficiency in some respect" Applicant's invention is a procedure that is implemented on a machine and improves human business managerial efficiency. Whether or not the process to be managed chosen by Examiner has an absurd or merely foolish objective matters not; his efficiency in managing that process is improved over not using the invention. Applicant's invention is statutory as it is in the technological arts (Examination Guidelines, footnote 8).

Examiner Erroneously Concludes Applicant's Invention Would Require Undue Experimentation

Examiner states that Applicant's invention requires undue experimentation. However, Examiner makes at least three (3) errors in so doing: (1) Examiner misstates the invention, citing the process and its objective as the invention, rather than the management of the process as Applicant has repeatedly stated. (2) Examiner cites an inappropriate example, which example arises only from failing to apply all the steps of any claim and thereby circumvents the claims assured and reproducible result (managing the process having an objective). (3) Examiner ignores the multiple applications of the invention that are taught, focusing instead on an artificial and perverse presumed "application." In so doing, Examiner fails to practice the invention and so no example lacking an assured and reproducible result is given by Examiner.

The steps of Applicant's claims, taken from Applicant's written description, teach all the elements necessary for management of a business process or operation including its definition at any level of detail, measurement of success or failure, process modification, execution via actors, control over authority and responsibility, and so on. As such, it does not require undue experimentation. Even if the implementation is complex and takes considerable time and effort to express in declarative form (as Applicant's invention describes), the Examination Guidelines makes it clear that such complexity and time and effort is not to be confused with "undue experimentation" (Exam Guide, V.B.2).

Furthermore, page 3 of Examination Guidelines states:

> "Applicant may assert more than one practical application, but only one is necessary to satisfy the utility requirement."

Applicant's specification has stated multiple practical applications, both in general (automating business management, improving management efficiency, modeling and simulating a business, etc.) and in detail (managing communications or emails, managing product production, growing the business, managing sales, managing supplier choice, managing expense authorizations, and so on). These practical applications may be implemented via Applicant's invention, described in both the specification and claims, as would be clear to one of skill in the arts.

Examiner Presents a Strained and Unsupported Interpretation of Statutory Requirements

For the record, throughout the prosecution of this application, Examiner has interpreted the law without citing any basis for those strained interpretations. The present office action is no exception. This unprofessional practice by Examiner puts an undue and extremely prejudicial burden on a lone inventor of limited financial means. Furthermore, it makes it impossible for any patent attorney to do more than refute Examiner's unsupported opinions, or in order to be specific, to guess as to Examiner's hidden mental intent.

Examiner Misquotes Applicant and Mischaracterizes Applicant's Invention

Without cited basis, Examiner asserts his interpretation of "concrete": "In order to be considered concrete, the claimed invention must be assured and reproducible." Examiner goes on to assert "independent claims 112 and 192 provide no concrete result," giving as his justification a further assertion that "the claimed invention is merely a 'reasoning paradigm,' (i.e., theoretical approach/roadmap) as described by Applicant, and produces no concrete result."

Examiner fails to provide any citation or other support whatsoever to support his false assertion that Applicant states his "invention is merely a reasoning paradigm." **Applicant does not make and has not made such a statement.** That assertion completely mischaracterizes Applicant's invention and statements.

Examiner appears to rely solely on the following concluding remarks by Applicant's attorney in the March 14, 2003 Response to Office Action:

> "The Examiner's difficulty with this application may lie in part with the difficulty of comprehending a new approach, particularly one **based on a reasoning paradigm** (the "declarative method") which is at present chiefly limited to a small sub-class of computer science and database specialists. This reasoning approach does not require computer implementation, though for large-scale, complex, or detail-intensive operations such assistance may make the difference between desire and attainment." (March 14, 2003 response to OA; emphasis added).

Applicant's attorney states that the new approach – not even the invention itself – is *based on* a reasoning paradigm; only Examiner has equated Applicant's invention to "merely a reasoning paradigm." Examiner has confused "a new approach" (described informally by Applicant's attorney) with "the invention" (defined by the claims and enabled by the specification). Examiner's insistently repeated statement is simply false

(a "mere reasoning paradigm" cannot change the world as applicant's invention does), as is his insistence on attributing it to Applicant or Applicant's attorney.

Applicant's attorney states that the reasoning approach, which is distinct and separate from the invention, does not require computer implementation. This assertion falls far short of saying either that all applications of the invention do not require computer implementation, or that the any non-computer implementation will suffice for large-scale, complex, or detail-intensive operations such as those found in real-world businesses. This assertion also distinguishes the reasoning approach from the real-world implementation of a useful, repeatable, and concrete computer implementation disclosed in Applicant's invention, specification, drawings, and claims.

Only the Examiner states (erroneously) that Applicant's invention (which Examiner is required by PTO examination guidelines to identify as that taught by applicant's specification and claims, not Examiner's unsupported imagination) can be practiced with pencil and paper, or that Applicant's invention does not require computer implementation. Yet the Examiner makes these assertions while simultaneously claiming that Applicant's invention is not enabled by Applicant's specification! How can the Examiner possibly know that an invention can be practiced with pencil and paper if it is not enabled? How can such a general and otherwise unsupported assertion of lack of enablement, make it possible for anyone else to know whether the Examiner has misread the claims or misread the specification?

Furthermore, how can Examiner make such an assertion, in fact, when the objected-to claim's preamble unequivocally states: "A computer-implemented business method...."? The application's text directly contradicts Examiner's conclusion.

Examiner has a copy of Applicant's application. **PRECISELY WHERE** *does Applicant make any statements that support Examiner's strained interpretation of Applicant's attorney's comments?* Were Examiner to provide proper citations, Examiner's assertions would be trivial to refute.

Examiner Misconstrues Limiting Terms of Art

Examiner interprets the limiting terms "reasoning paradigm" and "reasoning approach" outside the art in which Applicant's attorney uses it, pretending this description of Applicant's invention is of it being a mere mental act (i.e., subjective). Applicant's attorney's quoted use of the terms "reasoning paradigm" and "reasoning approach" is as terms of art well-known to those skilled in the technology of rule-based systems, and no one well-read, let alone one skilled in the art of rule-based systems would make Examiner's mistake.

The terms "reasoning", "paradigm", and "reasoning paradigm", are terms of art for rule-based systems as is clearly indicated by U. S. Patent Number 5,581,664 titled "Case-based reasoning system" and awarded December 3, 1996. The specification states "This invention relates to case-based reasoning and to a case-based reasoning component of a rule-based reasoning system" and "The invention provides a case-based reasoning system which is smoothly integrated into a rule-based reasoning system, thus coordinating case-based reasoning techniques and rule-based reasoning techniques in a unified automated reasoning system." It cites the following references in the art, each of which uses the term "paradigm" and one of which uses the term "reasoning paradigm":

> Skalak, D. B., "Options for Controlling Mixed **Paradigm Systems**," Proc. Workshop on Case-Based Reasoning, Jun. 1989, 318-323. .
>
> Yen, J. Neches, R. and DeBellis, M., Specification by Reformulation: A **Paradigm** for Building Integrated User Support Environments, Proceedings of the National Conference on Artificial Intelligence, AAAI, Aug. 1988, pp. 814-818. .
>
> Stanfill, C. and Waltz, D. L., The Memory-Based **Reasoning Paradigm**, Proceedings of the DARPA Workshop on Case-Based Reasoning, May 1988, pp. 414-424. .

In contrast to these awarded patents, Applicant's specification never uses the word "paradigm" at all. With respect to the word "theoretical", Applicant's specification uses

this word exactly four (4) times, the first three (3) of which are describing the prior art and the last of which is describing a concrete, tangible, measurable, and valuable (i.e., measurably useful) result of the invention, namely the result of reducing manual management effort to the theoretical minimum (Specification, p.24)!

We note that Examiner uses the phrase "theoretical approach" and, though we have no idea where Examiner obtained this phrase, we likewise assert that its use in a specification, let alone in prosecution of a patent application, cannot be cause to deny patent. To do so would, again, be inconsistent with the PTO which has awarded at least 1686 patents that use the phrase "based on theory" (including at least one in which the invention is asserted to be "based on theory" – U. S. Patent 5,913,916) and at least 451 patents that use the phrase "theoretical approach".

For example, U. S. Patent 3,952,280 titled "Radiation monitoring of an object space with a clutter suppression technique" filed January 10, 1974 and awarded April 20, 1976 states:

> "... this and additional objects are accomplished by the present invention by applying a known **theoretical approach**..."

Examples of such technical usage of and references to "reasoning paradigm" may be found in US Patents 5,119,318; 5,544,308; 5,581,664; and 5,699,402.

Examples of such technical usage of and references to "reasoning approach" may be found in US Patents 5,068,664; 5,130,936; 5,148,370; 5,408,587; 5,528,516; 5,640,468; 5,661,668; 5,666,481; 5,717,835; 5,774,357; 5,787,234; 5,867,386; 5,875,108; 5,901,246; 5,903,454; and 5,920,477.

Examples of such technical usage of and references to "declarative method" may be found in US Patent 5,819,257; and "declarative" in US Patents 4,658,370; 4,713,775; 4,752,889; 4,803,641; 4,847,784; 4,866,634; 4,893,286; 4,941,102; 4,953,147; 4,984,773; 5,129,043; 5,140,671; 5,144,685; 5,167,012; 5,170,464; 5,175,800; 5,182,793; 5,274,572; 5,276,775; 5,398,304; 5,402,526; 5,412,756; 5,418,888; 5,487,135; 5,495,603; 5,497,486;

5,528,516; 5,530,861; 5,557,742; 5,617,514; 5,630,025; 5,636,344; 5,644,686; 5,661,668; 5,668,897; 5,696,885; 5,701,400; 5,717,915; 5,720,007; 5,732,397; 5,758,029; 5,761,493; 5,806,056; 5,822,745; 5,826,077; 5,870,768; 5,892,947; 5,960,404; 5,970,490; 5,974,405; 5,980,096; and 6,006,028.

Contrary to Examiner's interpretation of "reasoning paradigm", "reasoning approach", and "declarative method", these terms do not refer to any process occurring in the mind and Applicant's invention is not a mere mental act because it pertains to a computer implementation of a business model whereby management of a business in the real-world is automated as stated in the specification.

Formulating a rejection based on such unsupported importation of terminology and unfounded interpretation outside limitations made clear by Applicant's specification, would allow any Examiner to assert for any application: "I refuse to award this patent because I don't like it", or "because I don't have the time to understand it".

An Assertion of an Invention Being Based on a Reasoning Paradigm, Theoretical Approach, or Roadmap is Insufficient Cause to Reject an Application

Examiner apparently contends that nothing **based on** a reasoning paradigm, a theoretical approach, or a roadmap can be an invention. If this is not Examiner's contention, then Examiner's office actions are misleading Applicant as no other reason has been given for Examiner's rejections than an indirect allusion to such statements by Applicant's attorney. Following this reasoning, no technological invention consistent with or suggested by science is patentable. Such a contention by Examiner would contradict the opinion of the PTO as evidenced by numerous US Patents including US Patent 5,913,916.

Mention of an approach being *based on* a new reasoning paradigm – even in a specification – is insufficient cause for the PTO to reject a patent, as evidenced by patents previously awarded (see citations above). Indeed, at least 13,229 awarded patents use the word "paradigm" in the specification, and ten (10) use the phrase "reasoning paradigm".

In fact, U. S. Patent Number 5,119,318 titled "Expert control system for real time management of automated factory equipment" and awarded June 2, 1992 states that "The UME system/method **is based on a** four-state **reasoning paradigm**" and "the UME expert system was constructed with the above-described four level **reasoning paradigm**", (emphasis added) and the invention is designed to address a problem in testing the rule-base of such a system.

An invention can incorporate a reasoning paradigm. U. S. Patent 5,544,308 titled "Method for automating the development and execution of diagnostic reasoning software in products and processes" and awarded August 6, 1996 states:

> "The subject invention is a new and useful diagnostic reasoning process which enhances and optimizes fault isolation procedures resulting in more efficient and accurate product/process diagnoses. **It employs a diagnostic reasoning paradigm** predicated on plausible inference based on both the hardware design and the test results obtained." (Emphasis added.)

Claims can cite a reasoning paradigm. U. S. Patent 5,699,402 titled "Method and apparatus for fault segmentation in a telephone network" filed September 26, 1994 and awarded December 16, 1997 contains the claim:

> "13. The expert system of claim 12 wherein one of the plurality of expert subsystems operates on a rule based **reasoning paradigm**." (Emphasis added.)

Contrary to Examiner's objection, the specifics of a method patent can depend on a reasoning paradigm, and the assurance and reproducibility of the result can depend on such a reasoning approach. U. S. Patent Number 6,026,442, titled "Method and apparatus for surveillance in communications networks" filed November 24, 1997, and awarded February 15, 2000, states of its invention:

> "In a specific embodiment, the system utilizes two reasoning agents which in combination carry out the surveillance task. The inputs and outputs of these agents are defined, but there are several ways to construct the agents **depending on the reasoning model or paradigm selected**." It goes on to point out that "This identification is accomplished automatically and in real-time by the application of **reasoning paradigms**, e.g., rule-based reasoning, case-based reasoning, constraint based reasoning, fuzzy logic or neural net analysis. Additional discussion of these and other **reasoning paradigm's** can be found in

> Artificial Intelligence: A Modem Approach by Stuart Russell and Peter Norvig, Prentice Hall, N.J., 1995. By application of any one or more of these **reasoning approaches**, any traffic on the network which is "suspect" or which requires further analysis is automatically identified." (Emphasis in the foregoing added.)

Note the use of "reasoning approaches" as a further term of art.

The above cannot be merely PTO policy prior to Applicant's filing date. In a more recent example, the invention is an application of a reasoning paradigm. U. S. Patent Number 7,225,401 titled "Case-based system and method for generating a custom document" filed July 23, 2002 and awarded May 29, 2007 states:

> "The invention is the unique application of the case-based **reasoning paradigm** to document creation."

Examiner Misapplies The Limiting Term "Management"

For Examiner's edification, according to dictionaries, the term "manage" means:

> "**1.** organize; regulate; be in charge of. **2.** succeed in achieving; contrive. **3. a.** succeed in one's aim, esp. against heavy odds. **b.** meet one's needs with limited resources, etc. **4.** control."; and "management" means "managing or being managed" (The Oxford Essential Dictionary: American Edition, c.1998 Berkeley Books, p. 362)

and

> "**1.** the act, art, or manner of managing, or handling, controlling, directing, etc." (Webster's New World Dictionary, c. 1974 Collins & World Publishing, p. 859).

Each of these definitions is consistent with Applicant's use of the term, where the aim or desired result is to succeed in efficient use of resources, better control, reduced risk, and so on as described in Applicant's specification. Many examples are intentionally composed so as to be recognizable by those familiar with workflow management systems and so involve tasks that are presented to workers, and phrased in ordinary English for obvious pedagogical reasons. Any person competent to design rule-based computer systems would know how to implement these examples. Although the examples sometimes reference manual tasks, it is well known to those skilled in the arts of business automation and application integration that these same tasks may be automated responses (Specification pp.5, 15, 16, and 23) using messaging and email to various types of agent.

Applicant's example "If no sales of new product X are made within three months, cancel production of new product X" (Specification, p. 21, 1st full paragraph, 4rth and 3rd line from the end of the paragraph) is not subjective, for its Condition and Action respectively will arise from, and affect, the real world. The measurement of whether or not any sale had happened depends upon a real world event; it's occurrence, or absence, is a provable reality after the three months. The consequential continuation, or halting, of sales is similarly a real world event, provable through external validation of the presence or absence of the product on the marketplace from the vendor.

Furthermore, this example shows an application of the invention that is both assured and repeatable. With this rule in place, the only way to stop production of product X, is to fail to make a single sale within the three-month period. Each quarter, the operation of the manufactory for product X will continue or stop, solely dependent upon the external reality of the continued sales of at least one unit of that product. Any other possible vendor for product X that implemented an identical system and rule, would face the same quarterly test – with the perfect assurance that production would continue only as long as at least one sale was made per quarter. The first of the competitors to not make such a sale would see themselves beaten by their fellow. If this invention with that rule were in place, on the last day of the quarter, with no sales reported and all sales efforts ceased, only a madman, a complete fool, or someone utterly separated from reality, would bet even a dollar that production of X would continue. *How much more 'assured' and certain can cause-and-effect be?*

As would be obvious to one of even ordinary skill in the relevant arts, sales management systems often keep track of product sales by date, and so can track intervals without sales. It is feasible to link this capability with the creation of a rule-triggered, automated response (e.g., email or other messaging capability as cited by applicant's specification (pages 5, 19-21) would be an obvious vehicle to anyone of ordinary skill), that can be sent to appropriate parties to order cancellation of production. If the sales and manufacturing systems are integrated, the cancellation can even be implemented directly

by changing the production plan. It would be possible to do this latter step without undue experimentation in a commercial ERP system like, for example, SAP. By contrast with a system that uses per event decision making by a human being to manage such business requirements, Applicant's invention has an obvious concrete, objectively measurable, tangible, assured and repeatable result that is due to automation of the management tasks involved.

Examiner Erroneously Identifies The Invention As A Method to Achieve An Objective, Rather Than a Method to Manage a Process Having Objectives

In Response to Arguments, Examiner rejects Applicant's argument that claim 112 is concrete asserting "the claimed invention indeed lacks concreteness and remains rejected under 35 USC section 112 and 35 USC section 101, because of the vagueness and broadness of the 'objective.'" Examiner misdirects his criticism to the achievability of an objective, failing to recognizing that the result of the objective may include either success or failure or any degree thereof (e.g., Specification pp. 5, 6, 9, 16, 17, 20). Examiner is wrong for multiple reasons. (1) Whether or not it is possible to devise a special case of an invention that fails to work cannot be a criteria for patentability. If it were, no method implemented as a computer program on a computer would be patentable and every such patent awarded by the PTO would be invalid because there exists at least one circumstance in which no result is assured or reproducible or even possible by any such method. Rather, it suffices that the invention can be practiced by those of skill in the art where the result of such practice is concrete ("assured and reproducible") in the intended use. Applicant's specification and claims make that intended use clear: business management via a model of business processes.

(2) Nor can Examiner be selective about inputs to create a situation in which the method fails and which is therefore clearly outside the inventor's intended use. Examiner's Guidelines cited above repeatedly instruct Examiner to rely on inventor's definition and characterization of the invention's application (Exam Guide; section II.B; IV.B.2 (d) (iii)). Every computer method permits input and it is possible to select input (or combination of inputs) that will cause an illegal operation. For example, every modern

computer can be caused to fail on division by 0, or by sufficiently deep recursion, or by any attempt to use resources that it does not have (memory, disk space, etc.). Most computers provide means for pseudo-random number generation and for one-way encryption that are not provably repeatable (assured and reproducible) within the capability of the computer. Are all inventions incorporating these then, according to Examiner, subjective?

(3) Furthermore, under Examiner's strained interpretation of "assured and reproducible," no computer implemented method is "assured and reproducible" if there exists a means to remove all power (whether electrical, mechanical, or other). Yet the PTO routinely awards patents for inventions that do not describe in their specifications how to address conceivable failures or misapplications of the invention, and particularly including those involving choice of inputs from the real world such as an objective. That a search engine can be given a search target as its objective for which nothing can be found does not make the search engine method unpatentable, nor does the fact that it produces a changing result when the search space changes (e.g., when new sites are created or found, and subsequently included, or when known sites post new content), make the search engine have a non-assured or non-reproducible result. Under such dynamic conditions, in fact, having the same result twice from differing inputs is the very opposite of being 'assured and reproducible'. These complex, computer-implemented methods are not stopped clocks that tell the correct time only once or twice in twenty-four hours.

Examiner complains that "objective may not be assured, reproducible, and could be impossible." Examiner misunderstands the invention as being required to reproduce a successful outcome for an objective. Instead, the invention is a method for managing, implementing, and executing a dynamic process; having stated that objective as a set of measurable goals and constraints in a particular way, the result is assured and reproducible because it is then mechanical. Thus, it is the management, implementation, and execution that must be assured and reproducible; not the attainment of any particular objective. An objective need not have a positive outcome, for what this invention uses is *the measure of that success or failure*; and the invention requires that that measure be

strictly determined by measurable goals, constraints, and rule sets. Indeed, detection of failure and response to failure is described in Applicant's specification (Specification, p. 17, 2nd para.). Furthermore, Applicant's claims (see claim 147) specifically incorporate a measure of failure in anticipation of such realistic events.

The invention is about management of process. It is not some guaranteed method for achieving any goal, but the ability to control the process and to measure the progress (or lack of progress) in achieving a goal. The rule-based model described by the invention enables management by objective to be implemented in a precise and automated fashion, without the flaws in the soft art Applicant has cited. Because goal is defined as being measurable, and because the method encourages decomposition of a process leading to a goal into ever more fine-grained rules, those measurements serve as inputs to the management and control feedback the invention defines and which it uses to define alteration of the process. The fact that the process can be altered is the very definition of managerial control. The fact that a user defines the rules (condition and actions) that make those changes, is the very definition of management.

Although Examiner's assertion that *a* user of the method could pick an objective that is unachievable, is right, that assertion is completely irrelevant to the evaluation of the patentability of the invention. Computer programs can be given a specific directive or objective that, when instantiated in the real world, becomes impossible (e.g., 'divide X by Y' will cause problems when X is assigned any value and Y is assigned a value of zero); but that does not statutorily obliterate their utility. Contrary to Examiner's position, an invention need have only one statutory result to be patentable. Applicant has cited numerous examples that are statutory, and therefore the invention overcomes Examiner's complaint.

Business methods can be given competing, even contradictory goals; but that does not statutorily obliterate their utility. 'Straw men' such as these, can be created *ad infinitum.* However, unlike the prior art, this invention provides a method for the user to automate the handling of such problems, to define conditions by which such objectives may be

deemed unacceptable, and thereby, for those conditions, to quickly and automatically eliminating failure modes caused by impossible or undesirable objectives. For example, Claim 161, and its following further dependent claims, specifically enable the use of 'adaptation rules' to cope with novel inputs from the real world. For a second example, Claims 167-173 specifically enable the handling of contradictions within the method. And for a third example, Claims 174-185 specifically enable the handling of failures. This invention enables a business to avoid failures and to identify (and change) impossible objectives. That the rules are a computer-implemented expression that can operate mechanically, means that the method becomes reproducible and assured.

Examiner Fails to Follow the Claims and Specification

For the Examiner to assert that a "likely impossible" objective such as "find a cure for every type of cancer in 3 months" could be asserted as proof that the invention lacks concreteness, is absurd for multiple reasons:

(1) Failure is a possible outcome of any objective; this was acknowledged by Applicant who even pointed out that the speed of failure identification was critical to business success, who teaches about classes (or types) of failure, and whose Specification teaches how the invention can respond in a useful way to such failures (Specification, p. 17, 2nd paragraph, and pp. 22-23);

(2) Examiner can only preclude some particular objective on the basis of an *a priori* subjective judgment;

(3) Examiner cannot import a limitation that is not found in the specification or the claims, as he does here; for the selection of objectives is not a part of Applicant's invention, any more than any other input from the real world to a computer or other machine can be to any other invention;

(4) The assured and reproducible result of Applicant's invention is not the achievement of objectives, but of *improved automation* of management, control, implementation, execution and measurement of processes and business operations. As Applicant's invention teaches how to do this

for the first time when the process definition can be changing (i.e., is dynamic and emergent), and therefore offers improved management efficiency over prior methods; and,

(5) Finally, the Examiner, in formulating his "example", did not follow Applicant's invention as disclosed in **any** version of any independent claim. For example, Examiner has not as instructed in claim 112 (and new claim193) and the specification:

(i) declaratively defined the objective as a set of measurable goals and constraints;

(e.g.: even accepting, for the sake of further analysis, Examiner's hypothetical assumption of the following was a set of measurable goals and constraints (a specific 3-month period can be set, that global measurement of the presence or absence of 'all' forms of cancer is feasible, that the implementation of any 'discovered' treatment can be simultaneously affected on all former patients, and that no issues of distribution, payment, licensing, or other minor real-world concerns exist, no constraints), Examiner did not state them declaratively;

(ii) stated a set of rules for accomplishing any part of the objective,

(e.g.: Set a Condition, for each type of cancer; identify a causative mechanism and then set to that Condition the causally-related Action, finding a preventative for that causative mechanism);

(iii) delegated any subordinate objective or any actor;

(e.g.: Pass this task to the National Institute of Health and specifically, the Director or senior executive thereof; who is to pass the same task according to each type of cancer, to the most knowledgeable expert thereof);

(iv) delegated a set of rules for accomplishing the subordinate objective;

(e.g.: Apply your (the subordinate's) expertise only to your particular type of cancer, but communicate all results to the Director or senior executive of the National Institute of Health at the end of the 3 months);

(v) defined the subordinate objective in terms of measurable Goals and subordinate Constraints;
(e.g.: Require that the subordinate: not go over your particular sub-group's budget, use non-existent miracles, equipment, or approaches, and prove your results with NIH-acceptable scientific methodology);
(vi) delegated authority, accountability, or responsibility via rules,
(e.g.: Require the subordinate to: Further subdivide the task amongst your subordinates according to their best fit of expertise, equipment, time availability, and creativeness, requiring them to adhere to the NIH standards and 3 mo. timeframe set forth above, including the reporting requirement to yourself and yourself upward to the Director);
(vii) determined if rule conditions were satisfied, or triggered any rule's(rules') action;
(e.g.: Measure for each rule Z_x, whether: Condition: no cure was found for cancer type Z_a-Z_m, result (failure); or alternatively, Condition: cure was found for cancer types Z_k-Z_n, result (success); and for all Z_x, result reported upwards;
(viii) modified any element via a rule based on input from the real world;
(e.g.: Condition: stop work on cancer type Z_x if a cure for Z_x is reported; for cancer types Z_k-Z_m, stop work); and,
(ix) executed automatically operations that progress towards the objective ;
(e.g.: Begin tracking research successes and failures and Report the same through the Director of the NIH); and, finally,
(x) implemented (i)-(ix) **as a computer program**.

Had Examiner followed the invention's claims -- had he actually gone to the effort of creating a real example rather than a one-line 'straw man' – the concreteness and utility of the invention, as a business method for tackling this extremely complex process, even with his deliberately ridiculous objective, is readily apparent. Had Examiner recognized

that it is the *process* progressing toward his lofty and "likely impossible" goal which the invention can more effectively **manage**, assessing both any measurable progress (or lack thereof), and detectable failure or success, and adapting to all of the above, then it would be obvious that no lack of assuredness and tangible result need occur. Furthermore, the entirety could be easily modified and adapted, both to changes in the real world, and to improved re-statements of the interim steps, or reformulations of the objective (changing '3 months' to '20 years') simply by modifying existing rules, adding new rules or disabling old rules – a useful result and the very essence of management and control. All of which is taught by the specification and claims, yet **none** of which was heeded by Examiner.

Applicant's specification teaches a method that uses rules to manage a business process or operation. It need not teach the rules of any particular, real world business process (although it does so as useful examples), because such rules are well-known to those who practice those business processes and often to those who implement them in software such as SAP, Oracle, Siebel, etc. and those who use or depend on such software. Applicant's specification does teach a new way of representing (declarative via rules), executing (via rules), and managing (again via rules) those business processes (and therefore providing a model of a business implementing those processes) and provides sufficient examples to enable the invention.

A Method for Managing a Business Process Is a Patentable Invention

Applicant's invention is not the only invention pertaining to management of business processes that is considered useful. For example, U.S. Patent Number 5,734,837 ("Flores") titled "Method and apparatus for building business process applications in terms of its workflows" filed January 14, 1994 and awarded March 31, 1998 is a newly discovered example of the prior art. It discloses how to build a business process application in terms of its workflows. By contrast, Applicant's invention describes *in part* as building those workflows (and even more complex business processes) *as needed* from rules, and discloses a method for enhanced management of those business processes

through additional rules that enable constrained (and therefore controlled) self-modification and feedback.

U. S. Patent Number 5,734,837 generates applications that encapsulate a business process based on definitions in a definitions database and is therefore not capable of implementing management changes without said generation and subsequent regeneration. Applicant's invention, by contrast, has several advantages over that prior art invention. It avoids the necessity of periodic, or episodic, generation of a most-current version of the application (and therefore the possibility of being out of alignment with now-current business requirements), because the business process is always active and is defined by the rules currently instantiated. The model is fully integrated with the business, so that the business is managed via the model. Thus, whenever a new business rule is captured or disabled, the business process is immediately brought up-to-date: A dynamic process has a definition that is not required to be static. Flores only discloses rules for links between workflows, while Applicant's invention makes full use of rules, even to capture workflow definitions. This enables Applicant's invention to provide management and measurement of the business process in context, whereas Flores cannot. Indeed, Flores treats workflows as atomic units with certain properties (displayed as loops), rather than as integral parts of the business process. There are numerous other differences that Applicant can cite if required to do so.

Examiner Erroneously Asserts That Applicant's Invention is Overly Broad

To reject Applicant's invention on the grounds of its being asserted to be overly broad would be an inconsistent application of applicable patent law and PTO policy. Several awarded patents are as broad or more broad than Applicant's invention.

Flores (U. S. Patent Number 5,734,837) does not restrict the invention to any particular type of business or specific application and is therefore as broad in this sense as is Applicant's invention, yet PTO awarded this invention.

U. S. Patent Number 5,745,878 titled "Business requirement handling apparatus" filed April 10, 1995 and awarded April 28, 1998, is a very broad approach to capturing business requirements in a database. It includes a "contradiction detection" means that incorporates user judgment. Without prejudice toward the validity of the Hashimoto patent, Applicant submits that such means is – according to argument Examiner has applied to Applicant's invention – subjective and therefore not assured and reproducible. Apparently Examiner is in disagreement with this award by the PTO.

U. S. Patent 5,311,422 is a general purpose method offering no particular field of application.

Examiner Asserts Without Basis Applicant's Invention is Not Tangible

Without cited basis, Examiner asserts his interpretation of "tangible": "In order to be tangible, the claimed invention must provide a real world result and must involve more than a manipulation of an abstract idea." Although Examiner has not made any argument that Applicant's invention is not useful, Applicant has been repeatedly forced to return to issues that Examiner has deferred raising, causing Applicant undue and unnecessary expense in prosecuting the application. Applicant therefore points out to Examiner that automation of managerial effort, and thereby improvements in managerial efficiency and consistency, have been deemed to provide a real world result and involve more than a manipulation of an abstract idea by the PTO as evidenced by numerous awarded patents (see examples below). Indeed, numerous inventions have been awarded patents by the PTO, in which the inventions provide far less clear a real world result and involve far more evidence of manipulation of an abstract idea than does Applicant's invention.

For example, U. S. Patent 6,947,951 titled "System for modeling a business", filed April 7, 2000 and awarded September 20, 2005 states "The present invention relates generally to systems for use in operating a business, and more particularly to method, apparatus, systems and articles of manufacture useful in managing a business." It goes on to describe the purpose of the invention:

> "As described in more detail herein below, the present invention provides the ability to capture a business model, manage business model changes, maintain business model history, provide collaborative communications of current and retrospective business model views, and synchronize the business model within enterprise applications within the business being modeled. According to one embodiment of the invention, the business model can be quickly synchronized with a company's enterprise application infrastructure. According to another embodiment of the invention, there is maintained a corporate memory of business model changes due to corporate initiatives such as corporate reorganizations, sales force restructuring, product category re-definition, marketing promotion rollouts, mergers, acquisitions, and spin-offs."

Thus, the patent teaches using a business model to record changes, a knowledge capture application of Applicant's invention. The assistant examiner was Andre Boyce and primary examiner was his supervisor at that time, Tariq Hafiz.

How is a model of a business, which itself can produce no real world result, but only a subjectively "better" understanding in the mind, more a real world result or less an abstract idea, than Applicant's invention?

As a second example, consider U. S. Patents 5,181,259 awarded Jan. 19,1993 explicitly relies upon a mental process involving human judgment. By Examiner's reasoning, it is therefore subjective in its results and so neither assured nor reproducible. It claims:

> "1. A method for automatic classification of a collection C of patterns **using the judgments of human experts** on a plurality of sample patterns, said method comprising the steps of: (a) selecting a set of sample patterns; (b) manually comparing members of said set of sample patterns to determine the degree of dissimilarity of each member of said set with respect to other members of said set; (c) producing an ordering .PHI. of said members of said set by their degree of dissimilarity in an n-dimensional space by means of multi-dimensional scaling to produce a real-valued ordering .PHI. of said sample patterns; (d) sensing the collection C of patterns to produce a signal S representing said patterns; (e) processing the signal S to produce a plurality of machine derived signatures representing distributions of primitive features of interest; (f) calculating the spatial distance among pairs of said patterns from said machine derived signatures to produce a matrix M of interpoint distances; and (g) creating a mapping of the ordering .PHI. on the matrix M by multiple regression; whereby said collection of patterns is organized into sets of similar patterns."

Note that "degree of dissimilarity" is purely subjective and no method for making that judgment reproducible is provided. By contrast, Applicant's invention incorporates depends upon nothing so subjective.

The State Street decision can have nothing to do with the difference in treatment by the PTO between Applicant's invention and the inventions cited here: The latter patent was filed and awarded prior to the State Street decision and the former patent after.

There is No Basis to Assert Applicant's Invention is Not Useful

Without cited basis, Examiner asserts his interpretation of "useful": "In order to be considered useful, the claimed invention must possess a specific, substantial, and credible utility." Although Examiner has not made any argument that Applicant's invention is not useful, Applicant has been repeatedly forced to return to issues that Examiner has deferred raising, causing Applicant undue and unnecessary expense in prosecuting the application. Applicant therefore points out to Examiner that automation of managerial effort, and thereby improvements in managerial efficiency and consistency, have been deemed to have specific, substantial, and credible utility by the PTO as evidenced by numerous awarded patents (e.g., U. S. Patent 6,947,951).

If in asserting that invention is not useful, Examiner is thereby asserting that management (i.e., control) of a specific process (dynamic or otherwise) used in business does not have specific, substantial, and credible utility. This is absurd, and the PTO has recognized the utility of such inventions by awarding patents (e.g., US Patents 6,678,716; 6,591,358; 6,115,646; 5,930,315; 5,737,727; and 4,544,318).

Examiner's Rejection Appears to Reflect Prejudice Towards Applicant

Because Examiner has been the examiner on multiple applications which were subsequently awarded wherein the subject matter was LESS tangible and LESS certain than Applicant's invention, and Examiner fails to provide details reasons for rejections of Applicant's invention, Examiner appears to be prejudiced in examining Applicant's patent application. The PTO has awarded numerous patents filed after Applicant filed the

present application that are of similar subject matter, and less concrete and tangible (cited throughout this response, including U. S. Patent 6,947,951).

Pencil and Paper Do Not Suffice to Practice Applicant's Invention

Examiner's office action p. 8, responsive to March 14, 2003 says that "... does not involve, use, or advance the technological arts, since the steps could be performed using pencil and paper." and "Applicant concedes ... that this "reasoning approach" does not require computer implementation."

Were Examiner to be correct is asserting that the ability to practice an invention with the use of pencil and paper precludes it from being patentable because it does not further the technological arts, then every method implemented on a computer as a program is not patentable. Examiner seems to think that pencil and paper suffice for such inventions. They do not. The pencil and paper are insufficient – the method of (i.e., explicit instructions for) their use is the subject of such inventions and without that method as prescribed in Applicant's specification, the pencil and paper would be useless for the stated purpose even in the most simplistic of cases (cases to which Applicant's invention is ***not*** directed).

Every computer program can be implemented with pencil and paper, using them as a recording device. The famous Alonzo Church, in reviewing the seminal paper that led to the creation of modern computing machines by Alan Turing, the father of modern computer science wrote: **"... a human calculator, provided with pencil and paper *and explicit instructions*, can be regarded as a type of Turing machine."** (Emphasis added.) (The Annotated Turing by Charles Petzold, (c) 2008, Wiley p. 63 and referencing to and quoting prior art 'Review of "On Computable Numbers, with an Application to the Entscheidungsproblem," Turing's paper by Prof. Alonzo Church in The Journal of Symbolic Logic, Vol. 2, No. 1, 42-43, March 1937.)

Indeed, Turing's paper showed the class of machines – later called Turing machines – for which such explicit instructions could be given. As is well known to those of even

moderate training in the foundations of computing science and computing technology arts, all modern digital computers are Turing machines.

In case Examiner does not know who Church was, Alonzo Church and Alan Turing invented computing technology as we know it today. We refer Examiner to any of the following patents for examples of Church's and Turing's importance: U. S. Patents 4,734,848; 5,355,496; 5,843,661; 5,963,739; 5,434,972; 6,266,569; 6,421,667; and 6,985,900. (See also Encyclopedia Britannica,, Micropedia, © 1977, Vol.. X, p. 11 and Encyclopedia Britannica, Macropedia, © 1977, Vol. 11, pp. 74, 636-637, 1083).

Modern computing machines were specified by Alan Turing in "On Computable Numbers, with an Application to the Entscheidungsproblem," published in Proceedings of the London Mathematical Society, 2nd series, Vol. 42 (1936), pp. 230-265. (Petzold, p. vii) Stanford University offers the following web page on Turing:

http://www.turing.org.uk/philosophy/stanford.html.

To argue that a computer implemented method is not patentable requires Examiner to argue that (a) computers aren't machines; (b) programs are not processes on machines; and, (c) a combination of a program and machine do not implement a virtual machine, which is functionally equivalent to a special purpose computer.

The history of computing begins with special purpose analog computation machines using, for example, levers, dials, and gears. The PTO has awarded some 1,411 patents citing analog computers. The history of computing then progresses to special purpose digital computation machines and from there to general purpose and programmable digital computation machines using wires and pegs progressing to electronics as we know them today. A general purpose computer executing a program is a functional mimic of a special purpose computer. A general purpose computer with a general purpose program (e.g., an operating system) is a functional mimic of some other machine (i.e., is a virtual machine). Such virtual machines are described in 6,023 patents awarded by the PTO, and 3,982 of those patents further apply the term to a Java Virtual Machine.

The following describe additional aspects of the history of computing:
U. S. Patent 3,934,124 awarded January 20, 1976 and title "Self-organizing controllers" describes analog computer with digital logic. U. S. Patent 5,159,661 awarded October 27, 1992 and titled "Vertically interconnected parallel distributed processor" describes the history of computing. These events occurred in the prior art, and continue to be recognized by the PTO as cited by recently awarded patents. Analytical engines and Universal Turing Machines (UTM) are described in U. S. Patent 6,697,089 awarded February 24, 2004 and titled "User selectable application grammar and semantics" which states:

> "It can be said that humans began to control and interact with "thinking" machines by providing coded instructions and data to the machines at the beginning to the Industrial Revolution. The punched card instructions provided to the Jacquard loom to select different patterns of woven thread anticipated the instruction sets provided to general purpose computers, today. Charles Babbage conceived a general purpose programmable Analytical Engine that could have performed complex functions defined by punched card or mechanical numerical wheel programming. Later developments in punched card technology by Herman Hollerith led to a greater ease of data input/output for tabulating machines and, ultimately, general-purpose computers. Alan Turing's Universal Turing Machine let to the understanding of a modem computer: one device that can be used for a wide range of intellectual tasks upon being supplied with the proper instruction set."

U. S. Patent 6,682,951 awarded January 27, 2004 and titled "Arrangements of microscopic particles for performing logic computations, and method of use" states:

> "Computation can also be achieved using purely mechanical means (see D. D. Swade et al., "Redeeming Charles Babbage's mechanical computer", Scientific American, pp. 8691, Feb. 1993; and K. E. Drexler et al., Nanosystems, John Wiley & Sons, New York, 1992). It has been widely assumed that mechanical devices will always be too large to be competitive with electronic computational devices. Atomic scale mechanical devices capable of performing logic computations would, however, be of interest to the computational technology community."

Examiner Asserts Without Basis That Applicant's Invention Is Not Concrete

In asserting that invention is not concrete, Examiner is asserting that invention's enablement of control of a specific process having expression in a computer as an

interconnected set of rules cannot be assured and reproducible. Yet invention gives specific expression to a process on a machine, and that machine cannot deviate from its instructions. It is therefore assured and reproducible to exactly the same degree that any set of computer instructions is assured and reproducible. The PTO has repeatedly agreed with applicant that a computer implemented method is assured and reproducible as evidenced by numerous awarded patents, both before and after the State Street decision. At most, in applicant's invention the process definition may change and the computer implemented method may accept inputs from or output response to, an Actor. But the combination of any specific set of inputs and rules that combine to express a process to the computer implemented method forms an assured and reproducible result; and so any combination of these, no matter how varied, also is assured and reproducible in its result. The machine performs mechanical computation in the prescribed manner and cannot produce surprise results!

For all, and for any combination of subsets of the above reasons, Applicant respectfully asserts that the objections under Section 101 have been successfully traversed, and that the revised claims are in proper form for issuance of a patent.

Conclusion

For all the reasons given above, it is respectfully submitted that the claims comply with the requirements of Sections 112 and 101 such that this invention attains at least one concrete, tangible, and useful result and is of patentable merit.

Accordingly, this application is now submitted to be in full condition for allowance, which action is respectfully solicited.

In the event Examiner does not consider a specific independent claim allowable, it is respectfully requested that he identify those dependent claims that, with suitable amendment to remove their dependency, would be allowable as this may assist the examination process.

Applicant requests a telephonic interview with the Examiner if the Examiner has any questions or believes that any issues remain respecting allowance of the application at prior to the Examiner's preparation and filing of a Final Office Action in reply to this Response, to attempt to both elicit and as possible resolve concerns that may have resulted from miscommunication or misreading.

This request is made even though Examiner has not responded to identical prior requests; and these request are made to try to assist, not impede or assail the PTO.

Respectfully Submitted;

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